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For the President of the European Patent Office
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Patentanmeldung Nr.
Patent application no.
Demande de brevet n°

PCT/EP 98/04132



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Application no.:
Demande n°:

Anmelder: 1. NOKIA TELECOMMUNICATIONS OY - Nokia Group, FINLAND
Applicant(s): 2. HAUMONT SERGE - Nokia Group, FINLAND
Demandeur(s): 3. KARI HANNU - Nokia Group, FINLAND

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Titre de l'invention:

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Bemerkungen:
Remarks: Further Applicants:
Remarques:

4. KANERVA MIKKO - Nokia Group, FINLAND

Feld Nr. V BESTIMMUNG VON STAATEN

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Der Anmelder erklärt, daß diese zusätzlichen Bestimmungen unter dem Vorbehalt einer Bestätigung stehen und jede zusätzliche Bestimmung, die vor Ablauf von 15 Monaten ab dem Prioritätsdatum nicht bestätigt wurde, nach Ablauf dieser Frist als vom Anmelder zurückgenommen gilt. (Die Bestätigung einer Bestimmung erfolgt durch die Einreichung einer Mitteilung, in der diese Bestimmung angegeben wird, und die Zahlung der Bestimmungs- und der Bestätigungsgebühr. Die Bestätigung muß beim Anmeldeamt innerhalb der Frist von 15 Monaten eingehen.)

1. The first step is to identify the key components of the system. This includes understanding the hardware, software, and data involved.

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SUMMARY OF THE INVENTION

It is an object of the present invention to provide a method and system for selectively providing a subscriber-specific
5 service to a subscriber in a cellular network.

This object is achieved by a method for providing a service to a subscriber in a network, comprising the steps of providing a network information of the subscriber to a
10 service provider; generating a service message on the basis of the provided network information; and transmitting the service message to the subscriber.

Furthermore, the above object is achieved by a system for
15 providing a service to a subscriber in a network, comprising providing means for providing a network information of the subscriber to a service provider; and control means for controlling the provision of the network information to the service provider in dependence on a predetermined subscriber
20 condition.

Preferably, the network information relates to an identity, a location, an address and/or an operating state of a mobile station of the subscriber in a cellular network. The location
25 information may be derived from a data base for converting a cell identification of the mobile station into a location thereof.

The providing means may comprises a transmitting means for
30 transmitting the network information of the subscriber to the service provider, wherein the control means controls the transmitting operation in dependence on the predetermined subscriber condition.

Alternatively, the providing means may comprise a storing
35 means in which the network information of the subscriber is stored and which is accessible to the service provider, wherein the control means controls the storing operation in dependence on the predetermined subscriber condition. The

provider of the external message may read the storing means by using a predetermined key relating to the subscriber, i.e. an IMSI or a PDP address.

- 5 The service message could be a local advertisement, a stock price change, or a header of an unread mail stored in a mail server, wherein the message is preferably transmitted when said mobile station is reachable according to the network information. Also, the service message could be any message
10 (mail) stored in a server and delivered to the mobile station when an indication that the mobile station is reachable has been received.

- The predetermined subscriber condition may be a request from
15 the subscriber, wherein the network operator may receive the request which may include a service provider address, retrieve location coordinates of the subscriber on the basis of a cell identification, and transmit the location coordinates to the service provider using the received
20 address. The request may be set by the mobile station or by the network operator.

- The predetermined subscriber condition is relevant for a subscriber and can be set by the subscriber or the operator.
25 It specifies which entity is allowed to access which subscriber information.

- The network information of the subscriber can be transmitted in a header of a packet transmitted by the subscriber. The
30 network information may further be inserted by a network element in a second packet which encapsulates the packet transmitted by the mobile station.

- Other predetermined subscriber conditions may be a
35 subscription parameter of the subscriber, an activation of a predetermined supplementary service, the location of the mobile station in a predetermined routing area or a cell, or the fact that the subscriber is located in its home area.

Accordingly, a subscriber-specific service message based on the provided network information of the subscriber can be transmitted by the service provider to any desired mobile station of the cellular network, since the mobile station is not required to generate and transmit a specific information relating to its location, identity or operating state. Since the provision of the individual network information can be controlled in dependence on a predetermined subscriber condition, the service can be restricted to selected ones of the subscribers.

BRIEF DESCRIPTION OF THE DRAWING

In the following, the invention will be described in greater detail on the basis of a preferred embodiment with reference to the accompanying drawing, which shows a system according to the present invention, wherein a GPRS network is connected via an IP or PSTN or ISDN network to a service provider.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the figure, a system for providing an external message to a subscriber is shown, comprising a GPRS network having a mobile station MS 1 radio-connected to a base station subsystem BSS 2. The BSS 2 is connected via a mobile switching center MSC 3 to a network 4, which could be any network like a PSTN, ISDN or Internet, to which one or a plurality of service providers 5 is connected. Alternatively, the service provider 5 may as well be directly connected to network nodes (MSC 3, Serving GPRS Support Node SGSN 6, Gateway GPRS Support Node GGSN 8) of the GSM or GPRS network.

Furthermore, a providing means 7 used for externally providing a network information of the mobile station is connected to a network element (MSC 3, SGSN 6, GGSN 8). Additionally, the providing means 7 may be connected to the network 4. The providing means 7 can be accessed by the service provider 5 and can request information from a network element like the MSC 3, the SGSN 6 and/or the GGSN 8.

Alternatively, the providing means 7 may be a database type of equipment which is automatically updated by network elements. Moreover, the providing means 7 may be integrated in a network element.

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Within a cellular network like the GSM or GPRS, information related to a mobile station of a subscriber are known. Such a network information may comprise an identity (e.g. International Mobile Subscriber Identity (IMSI) or Internet Protocol address (IP address)), a location information (e.g. cell or routing area) and an operating state indicating whether the mobile station reachable (e.g. Packet Data Protocol (PDP) context activated or not).

15 The GPRS network transmits the network information to the service provider 5 in dependence on a predetermined subscriber condition. The subscriber condition could be a context activation, a subscription parameter, the use of a given supplementary service, a cell identification indicating a certain routing area, the fact that the mobile station 1 is in its home area (HPLMN), or a specific request from the mobile station 1, or a combination of the above conditions.

According to a first example, the providing means 7 could be implemented as a part of the GGSN 8. In this case, the system operates as follows.

25 The service provider 5 informs the providing means 7 in the GGSN 8 that a message is waiting to be delivered to the MS 1. The providing means 7 stores the information that this service provider 5 (characterized by its service provider address) must be informed when the MS 1 becomes reachable. When the GGSN 8 detects that the MS 1 is reachable (PDP context activation or alert from Home Location Register HLR), 35 the GGSN 8 informs the service provider 5 that this MS 1 is reachable.

According to a second example, the providing means 7 may be distributed. In this case, the MS 1 could include a means for

determining the need of sending a specific network information (e.g. location) to the service provider 5. The SGSN 6 comprises a means for receiving a request from the MS 1, retrieving the network information needed, and forwarding the request and the relevant network information to a relevant means, i.e. the GGSN 8 (but it could also be the MS 1 or the service provider 5).

In case the mobile station 1 issues a request to provide a location information to the service provider 5, the service provider 5 is identified with its address, i.e. an IP address of the IP network 4. This request is transmitted to the SGSN 6 which then retrieves the network information of the MS 1 by means of the cell identification thereof. Typically, a data base could be provided for converting the cell identification of the MS 1 into geographical coordinates. Then, the location information and IMSI of the MS 1 and the address of the service provider 5 are forwarded by the SGSN 6 to the GGSN 8, i.e. providing means 7.

Subsequently, the GGSN 8 transmits the location information and the IMSI of the mobile station 1 via the network 4 to the service provider 5 by using the service provider address. Thus, the service provider 5 may generate the corresponding individual service message and transmit it to the identified MS 1 by using the corresponding IMSI address thereof.

As an alternative, the SGSN 6 could send the network information to the MS 1 (after a request from the MS 1), such that the network information of the MS 1 could be included in every packet transmitted by the MS 1. The location information could be added, for example, to a Ipv6 header of the mobile station packets.

Another option could be a "tunnel" between the GGSN and the service provider 5, so that each packet is encapsulated in a second packet and the network information (e.g. IMSI and location) is transmitted by the GGSN in the header of the second packet.

According to a third example, the providing means 7 may
comprise a data base in which a certain network information
of the MS 1 is stored, if one or a combination of the above
5 defined predetermined subscriber conditions is fulfilled. A
corresponding predetermined service provider 5 may obtain an
allowance to access the data base.

If the predetermined subscriber condition is fulfilled, e.g.
10 the MS 1 is in its home area, the SGSN 6 will store a certain
network information of the MS 1, i.e. location, PDP address
used, IMSI, reachability, in the database.

Accordingly, the service provider 5 may access the data base
15 by typically using the PDP address of the MS 1 as a key (or
the IMSI), so as to obtain the desired information about the
MS 1 and to generate and transmit the individual service
message to the MS 1.

20 In summary, a system and method for providing a service to a
subscriber in a cellular network is described. A specific
network information of a mobile station is provided to a
service provider which generates an individual service
message on the basis of the provided network information. The
25 provision of the network information may be dependent on a
predetermined subscriber condition. Thus, the service message
can be transmitted to predetermined subscribers without
requiring the subscriber to generate and transmit the
specific network information to the service provider.

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It should be understood that the above description and the
accompanying figure are only intended to illustrate the
present invention. Thus, the method and system according to
the invention may also be used in systems other than the
35 described GPRS system. The preferred embodiment of the
invention may vary within the scope of the attached claims.

Claims:

1. A method for providing a service to a subscriber in a
5 network, comprising the steps of:
 - a) providing a network information of the subscriber to a service provider;
 - b) generating a service message on the basis of the provided network information; and
 - 10 c) transmitting the service message to the subscriber.
2. A method according to claim 1, wherein said network information relates to at least one of an identity, a location, an address, and an operating state of a mobile
15 station of the subscriber in a cellular network.
3. A method according to claim 1 or 2, wherein said service message is a local advertisement.
- 20 4. A method according to claim 1 or 2, wherein said service message is a header of an unread mail stored in a mail server.
5. A method according to claim 1 or 2, wherein said service
25 message is a stock price change.
6. A method according to any one of claims 2 to 5, wherein said service message is transmitted when said mobile station is reachable according to the network information.
30
7. A method according to any one of claims 2 to 6, wherein the network information of the subscriber is transmitted by a network operator to the provider of the external message in dependence on a predetermined subscriber condition.
35
8. A method according to claim 7, wherein said predetermined subscriber condition is a request from the subscriber.

9. A method according to claim 8, wherein said request is set by the mobile station.

10. A method according to claim 8, wherein said request is
5 set by a network operator.

11. A method according to claim 8 or 9, wherein a network operator receives the request including a service provider address, retrieves location coordinates of the subscriber on
10 the basis of a cell identification, and transmits the location coordinates to the service provider using the received address.

12. A method according to any one of claims 2 to 11, wherein
15 the network information of the subscriber is transmitted in a header of a packet transmitted by the mobile station..

13. A method according to claim 12, wherein the network information is inserted by a network element in a second
20 packet which encapsulates the packet transmitted by the mobile station.

14. A method according to any one of claims 1 to 6, wherein the network information of the subscriber is stored in a
25 storing means in dependence on a predetermined subscriber condition, and wherein said storage means is accessible to the service provider.

15. A method according to claim 14, wherein the service
30 provider reads the storing means by using a predetermined key relating to the subscriber.

16. A method according to claim 14 or 15, wherein said
35 predetermined subscriber condition is a request from the subscriber.

17. A method according to claim 7, 14 or 15; wherein said predetermined subscriber condition is a subscription parameter of the subscriber.

18. A method according to claim 7, 14 or 15, wherein said predetermined subscriber condition is an activation of a predetermined supplementary service.

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19. A method according to claim 7, 14 or 15, wherein said predetermined subscriber condition is the fact that the subscriber is located in his home area.

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20. A system for providing a service to a subscriber in a network, comprising:

a) providing means (7) for providing a network information of the subscriber to a service provider (5); and

15 b) control means (6) for controlling the provision of the network information to the service provider (5) in dependence on a predetermined subscriber condition.

21. A system according to claim 20, wherein the network information relates to at least one of an identity, a
20 location and an operating state of a mobile station (1) of the subscriber in a cellular network.

22. A system according to claim 21, further comprising a data base for converting a cell identification of the mobile
25 station (1) into allocation thereof.

23. A system according to any one of claims 20 to 22, wherein the providing means (7) comprises a transmitting means for transmitting the network information of the
30 subscriber to the service provider (5), wherein the control means (6) controls the transmitting operation in dependence on the predetermined subscriber condition.

24. A system according to any one of claims 20 to 22,
35 wherein the providing means (7) comprises a storing means in which the network information of the subscriber is stored and which is accessible to the service provider (5), wherein the control means (6) controls the storing operation in dependence on the predetermined subscriber condition.

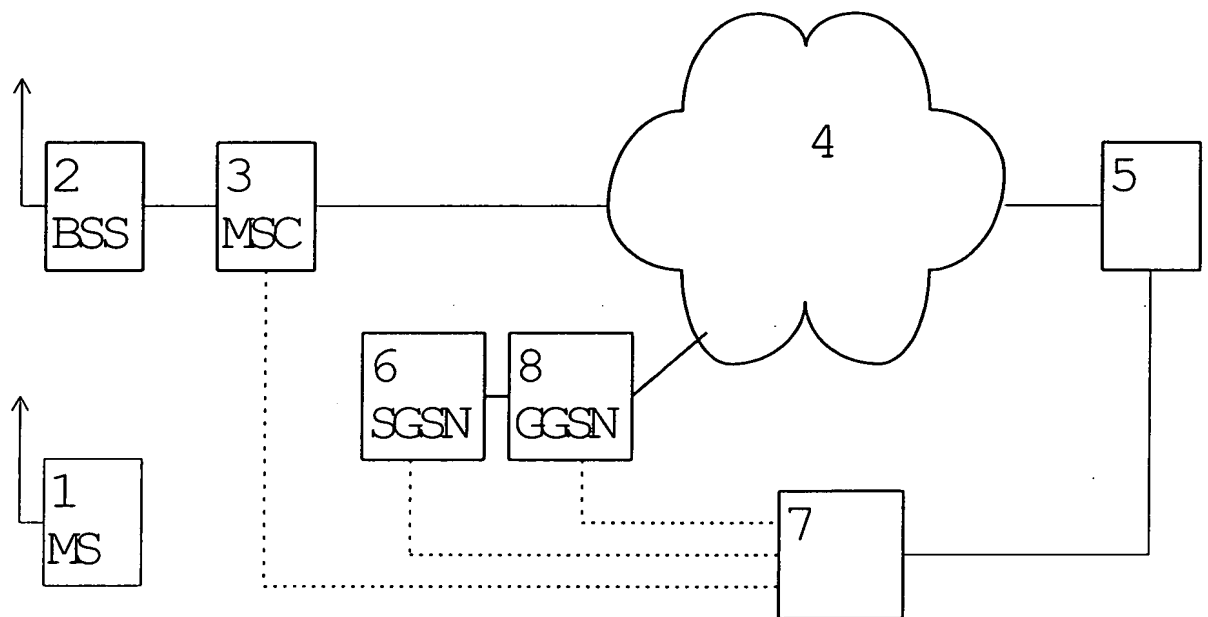
25. A system according to any one of claims 20 to 24,
wherein said predetermined subscriber condition is a request
from the subscriber.

5

26. A system according to any one of claims 20 to 24,
wherein said predetermined subscriber condition is a
subscription parameter of the subscriber.

10 27. A system according to any one of claims 20 to 24,
wherein said predetermined subscriber condition is an
activation of a predetermined supplementary service.

15 28. A system according to any one of claims 20 to 24,
wherein said predetermined subscriber condition is the fact
that the subscriber is located in his home area.



Abstract:

System and method for providing a service to a subscriber in
5 a network. A specific network information of a mobile station
(1) is provided to a service provider (5) which generates an
individual service message on the basis of the provided
network information. The provision of the network information
may be dependent on a predetermined subscriber condition.
10 Thus, the service message can be transmitted to predetermined
subscribers without requiring the subscriber to generate and
transmit the specific network information to the service
provider (5).